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XXXIII.—*Report upon the Scorpiones and Pedipalpi obtained on the Lower Amazons by Messrs. E. E. Austen and F. Pickard Cambridge during the trip of Mr. Siemens's Steamship 'Faraday.'* By R. I. Pocock.

Though all the species of Pedipalpi brought back by Messrs. Austen and Cambridge prove referable to previously known species, they are nevertheless of considerable interest as desiderata to the collection of the British Museum and as serving to fill important gaps in our knowledge on points of geographical distribution, constancy of structural features, &c. Of the species of Scorpions, all but one—namely, *Brotheas Gervaisii*—appear to be undescribed. The discovery, however, even of this form is of value, since the species was established upon two specimens of which the locality was unknown. The other species are nearly allied to forms that occur in the north and north-western countries of South America (Guiana, Colombia, &c.); but it is interesting to note that no member of the family Bothriuridæ nor of the genera *Centrurus*, *Hadruroides*, *Caraboctonus*, *Chactas*, *Opisthacanthus*, *Diplocentrus*, &c., which occur in other parts of the continent, seem to be represented on the Lower Amazons.

Order PEDIPALPI.

Family Tarantulidæ.

Subfamily *Admetinæ*, nom. nov.

(= *Tarantulinæ*, Simon; *Neophryninæ*, Kraepelin.)

Genus Admetus, C. Koch.

Admetus, C. Koch, Uebersicht des Arachnidensystem, 1850, p. 81; Simon, Ann. Soc. Ent. Fr. 1892, p. 51.
Neophrynus, Kraepelin, Abh. Hamburg. Anst. xiii. pp. 21 & 23 (1895).

The genus *Admetus* was established by C. Koch for the following species of *Phrynus*:—*pumilio*, Perty, *fuscimanus*, C. K., *marginemaculatus*, C. K., and *palmatus*, Herbst; and since none of these species have any other generic name older than *Admetus* by which the group could be designated in accordance with accepted rules of nomenclature, *Admetus*, being unpreoccupied, must be reserved for one of the species mentioned; and since Simon, in 1895, distinctly selected *palmatus*, Herbst, as its type, and correctly diagnosed the genus, it is not easy to see Kraepelin's reasons for proposing the new name *Neophrynus* for the same section upon discovering that the names *Tarantula* and *Phrynus*, by which it had been previously (though erroneously) known by Karsch, Thorell, and myself, had to be used in a totally different sense. The fact that *pumilio*, one of the species referred by Koch to *Admetus*, is not congeneric with the others, does not interfere with Simon's right to apply *Admetus* to one of the latter, nor confer upon Kraepelin the power of disregarding the name as unusable.

Thus compelled to adopt *Admetus*, I venture to propose the new name Admetinæ for the subfamily embracing the three genera, *Admetus*, Koch, *Heterophrynus*, Poc., and *Phrynopsis*, Poc.

Admetus santarensis (Poc.).

Tarantula santarensis, Pocock, Ann. & Mag. Nat. Hist. (6) xiv. p. 284 (1894).

Many specimens were taken at Santarem, one in a house, a few in the forest, and many from a termite's nest upon the campos. The species was based upon a single female example brought from Santarem by Mr. Wickham.

This species differs from the forms that I have named *barbadensis*, *pulchripes*, and *Gervaisii* in possessing six long spines upon the trochanter of the chela instead of five.

The young are much more variegated in colour than the adults, the terga of the abdomen being ornamented with a pair of pale spots, which converge and become united upon the seventh segment.

Genus Heterophrynus, Poc.

Heterophrynus longicornis (Butler).

Phrynus longicornis, Butler, Ann. & Mag. Nat. Hist. (4) xii. p. 123 (1873).

Heterophrynus longicornis, Pocock, Ann. & Mag. Nat. Hist. (6) xiv. p. 287 (1894).

Several specimens of this species were obtained under tiles and bricks at Pará, others in termites' nests in the forest at Santarem, and one at Monte Alegre. It has been previously recorded from the two first-mentioned localities.

The only comment that it seems necessary to make in connexion with these specimens is that the shortness of the chela or palp in the male, which I pointed out as distinctive of this form as compared with *chiracanthus* and *Batesii*, though regarded as of no importance by Dr. Kraepelin, seems to be a perfectly constant, and therefore important, character. In *Batesii* and *chiracanthus* the femur of the chela is about twice the width of the carapace in length, whereas in *longicornis* the length of the chela only just exceeds the width of the carapace in the adult and is much less than the length of the femur of the second leg, instead of being approximately equal to it or greater than it, as in *chiracanthus* or *Batesii*. It is true that the chelæ are much shorter in the young than in the adult, but that the shortness of the organ in *longicornis* is not attributable to youth seems proved by the circumstance that it obtains in the largest specimens examined—specimens with the carapace attaining a width of 16–18 millim., the femur of the palp being but 19–20 millim., whereas in examples of *Batesii* with the carapace 12·5 millim. in width the femur of the appendage in question measures 25 millim. In an ovigerous female of *longicornis* from Pará, with the carapace 15 millim. wide, the femur of the chela measures 14·5 millim.

Family **Thelyphonidæ**.

Genus Thelyphonellus, Poc.

Thelyphonellus amazonicus (Butler).

Thelyphonus amazonicus, Butler, Ann. & Mag. Nat. Hist. (4) x. p. 201, pl. xiii. fig. 2 (1872).

Thelyphonellus amazonicus, Pocock, Ann. & Mag. Nat. Hist. (6) xiv. p. 133 1894).

Specimens obtained in the forest at Santarem and at Parintins under leaves and rotten wood.

The type of this species was obtained by H. W. Bates at Altar do Chaõ, Santarem.

Order SCORPIONES.

Family **Buthidæ**.

Genus Isometrus, Hempr. & Ehrenb.

Isometrus maculatus (De Geer).

A specimen of this ubiquitous species was taken on the vessel at Pará.

Genus Tityus, C. Koch.

Tityus Cambridgei, sp. n. (Figs. 1, 1 *a*, p. 362.)

♀.—*Colour* of upperside a uniform black or reddish black throughout, paler below; pectines testaceous; a triangular smooth testaceous area on the middle of the hinder border of the third sternite.

Sculpturing, granulation, &c. as in the Bogotá form *forcipula*, Gervais (=*americanus*, Thorell, Kraepelin, &c.), but not so coarse.

Tail parallel-sided, segments 2 and 4 of equal width, the fourth twice as long as wide; the inferior crests on segments 2–4 not confluent, the median lateral crest of the second only visible on the posterior fourth of the segment, or, at most, represented in front by minute granules; tail about 5½ times the length of the carapace; the hand and digit a little less in length than the first two segments and half the third, and twice the length of the carapace; width of the fourth segment equal to half its length, width of the fifth a little less than half its length.

Hand as wide as the brachium, the latter only a little longer than the carapace and less than three times as long as broad; hand-back two thirds the length of the carapace and half the length of the movable digit, which has 15 rows of teeth.

Pectinal teeth 22; base of shaft lobate.

♂.—Tail feebly incrassate posteriorly as in the female, about 6½ times the length of the carapace; the finger and hand as long as its first two segments and half the third, and 2½ times the length of the carapace; fifth caudal segment nearly three times as long as wide.

Chela long and slender. Carapace about ¾ the length of

the brachium, which is at least four times as long as broad; hand long and slender, externally concave, its width equal to that of the brachium and about one third the length of the hand-back, which is a little less than the length of the carapace and more than half the length of the movable digit; digits in contact only feebly lobate basally.

Pectinal teeth 21–22.

Measurements in millimetres.— ♀. Total length 72; length of carapace 7·8, of tail 43, length of its fourth segment 7·5, width 3·8; width of vesicle 2·8, of brachium and hand 2·8; length of brachium 8·5, of hand-back 5, of movable digit 10·2.

♂. Total length 80; length of carapace 7·6, of tail 52, length of fourth segment 9·5, width 3·5; width of vesicle 3, of brachium and hand 2·5; length of brachium 11, of hand-back 7, of movable digit 12.

Loc. Pará (type, two males and a female).

Apart from finer granulation &c., this species may be distinguished from *T. forcipula*, Gervais, by the following features:—

In the female of *forcipula* (co-typical example) the tail is very distinctly incrassate, the fourth and fifth segments being distinctly wider than the first, and their width about ¾ their length; the crests are much stronger and the median lateral on the second is complete, though weaker forwards. Still more striking are the differential characters of the male: as I have already pointed out (Ann. & Mag. Nat. Hist., June 1889, pp. 54–56), the male of *forcipula* has the tail of normal length, but enormously thickened posteriorly, the width of the fourth segment being almost equal to its length; again, the chelæ are not elongate, but the hand is enormously thickened, nearly twice the width of the brachium, the digits being widely separated, sinuate and lobate.

In its sexual features *Cambridgei* resembles *androcottoides* of Karsch, but, apart from the differential feature presented by the distinctness of the inferior caudal keels, the hand of the male has a different form, as also has the vesicle of the tail.

Tityus metuendus, sp. n. (Figs. 2, 2 *a*, p. 362.)

♀.—Very like that of *T. Cambridgei*, but the tail thicker, the width of the fourth segment considerably more than half its length; the granulations of the tail also much less distinct.

Hand distinctly wider than the brachium and much less strongly crested than in *Cambridgei*.

Pectinal teeth 19.

♂.—Strikingly different from male of *Cambridgei* and approaching that of *forcipula* in the nature of its sexual characters. Tail incrassate to the middle of the fifth segment; width of the fourth and fifth considerably more than half their length, the whole tail about 6½ times the length of the carapace; the finger and hand as long as the first two segments and one third of the third, and only a little more than twice the length of the carapace; vesicle granular below and about equal to the brachium in width.

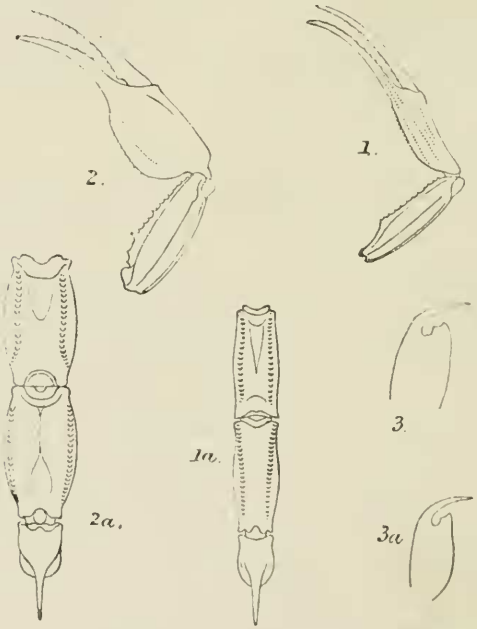

Fig. 1.—Hand and forearm of *Tityus Cambridgei* ♂.
Fig. 1 *a*.—Posterior end of tail of ditto.
Fig. 2.—Hand and forearm of *T. metuendus* ♂.
Fig. 2 *a*.—Posterior end of tail of ditto.
Fig. 3.—Vesicle of *T. silvestris*.
Fig. 3 *a*.—Ditto of *T. paraguayensis*, Kraep.

Chela moderately elongate; brachium not four times as long as wide; hand much expanded, much wider than brachium, its width about two thirds the length of the hand-back; the movable digit strongly lobate at the base, the immovable sinuate, leaving a narrow space between them when closed.

Pectinal teeth 20–21.

Measurements in millimetres.— ♀. Total length 77; length of carapace 8, of tail 46, width of its first and fourth segments 5, length of fourth 8; width of vesicle 3, of brachium 3·3, of hand 4; length of brachium 9, of hand-back 5·1, of movable digit 10·8.

♂. Total length 97; length of carapace 9·5, of tail 61, width of first segment 5, length 7·7, width of fourth 6·3, length 11; width of vesicle 3·8, of brachium 3·6, of hand 5·8; length of brachium 11·5, of hand-back 8, of movable digit 13.

Loc. of type (♂). Above Iquitos, on the Marañon or Amazons.

The Museum has two males and three females of this form from the above locality, and Mr. Cambridge procured one male specimen at Parintins, up the river above Santarem. This example has the chelæ rather more slender than in the two males from Iquitos; but since these two are not quite alike in the structure of the appendage, it would be incautious to attach a new name to the Parintins specimen without further material wherewith to test the constancy of the differences. The distinctions between this form and *forcipula* will be further discussed in a future paper.

Tityus silvestris, sp. n. (Fig. 3, p. 362.)

Belonging to the *columbianus* group of species and approaching most closely to the Demerara form *T. Quelchii*, Poc. (Ann. & Mag. Nat. Hist. (6) xii. p. 314. pl. xiv. fig. 1, 1893), and to the Paraguayan form *T. paraguayensis*, Kraepelin (Jahrb. Hamburg. Anstalten, xii. p. 19, 1895), of which the British Museum has examples collected at Assuncion by Dr. Bohls.

The dorsal and sternal surfaces of the trunk densely spotted black and yellow; there is, however, a conspicuous bright yellow T-shaped mark on the fore part of the carapace, a similar mark being much less conspicuous in *paraguayensis* and not noticeable in *Quelchii*, which is of a much more uniform tint and less distinctly mottled.

In *silvestris*, moreover, not only are the maxillary lobes infuscate throughout their length, but the dark pigment, in addition, spreads on to the coxæ of the second, third, and sometimes also of the fourth leg, whereas in the specimens of the other two species that I have seen the maxillary lobes are infuscate only at the tip, there being, however, in *paraguayensis* also a single spot upon the coxæ of the second leg.

In structural features *Quelchii* has better developed granulation and stronger keels, the sculpturing of *paraguayensis*

being finer than in *silvestris*, as is particularly noticeable on the superior caudal crests. And, lastly, in *silvestris* the vesicle is higher than in the other species, the tooth beneath the aculeus being very high, with a blunt and obliquely truncate apex.

Pectinal teeth 14–16 (in a young specimen 12–13). The single male example has 15. Rows of teeth on digit 14 (not including small apical rows); 15–16 along the outer row. (In *Quelchii* there are 13–14 rows of teeth, and not 11–12 as erroneously stated in the original diagnosis.)

The sexual characters are the same as in *paraguayensis*, but the fourth and fifth segments are much less strongly elevated.

♀. Total length of body and tail 34 millim., of tail 19·5; width of first segment 2, of fifth 1·5; width of brachium and hand 1·8.

♂. Total length 30·5, of tail 19, width of its first and fifth segments 2; width of brachium 1·5, of hand 2.

Loc. Santarem. Several specimens collected in the forest by Mr. F. O. P. Cambridge.

Note.—In addition to the specimens of *Tityus* here recorded, other examples belonging to the *americanus* type were collected at Paraná Buyassu and in the forest at Santarem; but since only females were obtained, I have refrained from definitely attaching names to them, seeing that they are not structurally identical with the females either of *Cambridgei* or of *metuendus*.

Family Iuridæ.

Subfamily *Chactini*.

Genus Broteochactas, Poc.

Broteochactas parvulus, sp. n.

♀.—*Colour* a tolerably uniform blackish brown, redder on chela and vesicle; legs fulvous, with femur and patella externally infuscate; lower surface fulvo-fuscous; pectines testaceous.

Carapace with its anterior border very slightly emarginate; the interocular area and the dorsal portion of the area behind the median eyes smooth; lateral portions closely and finely granular, with a few larger granules intermixed.

Tergа shining, nearly smooth, finely granular laterally and mesially, with a few larger granules intermixed, the last more coarsely granular, but without distinct crests.

Sterna entirely smooth and polished; a few large punctures here and there.

Tail a little more than three times as long as carapace, posteriorly narrowed; lower surfaces of segments 1–3 smooth, polished, keelless, but furnished with long bristles; the superior and superior lateral keel distinct and weakly granular, terminating on the second segment in an angular tooth; fourth segment like the third, but sparsely granular below, upperside of these segments sparsely granular; upperside of fifth without granules except on the side margins; the sides granular, the lower surface coarsely but not closely granular, lateral keels granular; vesicle coarsely granular below, hairy, smooth at base of aculeus.

Chela with humerus granular above on its anterior and posterior keel; brachium smooth, not keeled, hairy; hand smooth, polished and punctured above except towards the inner edge and the base of the immovable digit, where there is coarse granulation, the inner edge with a distinct basal tooth; hand-back and lower surface quite smooth, immovable digit stout, punctured, rugose.

Legs smooth except for the femora of third and fourth, which are finely granular externally.

Pectinal teeth 6–7.

♂.—Like the female, but with the carapace, terga, the sides of the caudal segment, including also the lower surface of the third and fourth, and the lateral portions of the sterna finely shagreened with granules.

Pectines larger, 8–9 teeth, in which the sensory area extends up to the base; upper surface of hand not so smooth as in the female, but only very finely shagreened externally.

Measurements in millimetres.— ♀. Total length 27; length of carapace 3·5, of tail 13, width of its first segment 2.

♂. Total length 24; length of carapace 3·5, of tail 13·8.

Loc. Santarem. Several specimens taken in the forest beneath rotten wood by Mr. Cambridge.

The three known species of this genus may be recognized by the following table:—

Female.

a. Carapace and terga and external surfaces of femora of legs smooth, without granules; hand and brachium also almost entirely smooth, as well as the sides of the fifth caudal segment..	*Gollmeri* (Karsch) (=*nitidus*, Poc.). (Venezuela and Trinidad.)
b. Carapace, external surface of femora of third and fourth legs, sides of fifth caudal segment,	

and at least the inner portion of the upper surface of the hand distinctly granular.

a^1. Upper and outer surfaces of brachium and hand covered with a reticulated pattern of granules; lower surface of hand and crest of hand-back also granular: length of adult about 50 millim. ..... *delicatus* (Karsch). (Guiana.)

b^1. Brachium, lower surface of hand and keel of hand, and area of hand adjacent to it smooth: adult less than 30 millim. ..... *parvulus*, sp. n. (Santarem.)

Male.

a. Carapace and terga more closely and coarsely granular; sterna distinctly granular at the sides, the anterior ones more so than the posterior; lower surface of hand and upper surface externally smooth ..... *parvulus*, sp. n.

b. Carapace and terga less closely granular; sterna almost entirely smooth; hand distinctly granular above and below.

a^1. External portion of upper surface of hand and crest of hand-back only very finely granular: less than 40 millim. ..... *Gollmeri* (Karsch).

b^1. External portion of upper surface of hand and keel of hand-back coarsely granular: over 40 millim. in length ..... *delicatus*, Karsch.

Genus Brotheas, C. Koch.

Brotheas Gervaisii, Poc.

Brotheas Gervaisii, Poc. Ann. & Mag. Nat. Hist. (6) xii. p. 78 (1893).

A single female specimen obtained at Gurupa.

This example differs from the type in certain characters, which, in the absence of more material, can hardly be regarded as of specific importance. For example, the intercarinal spaces of the tail are a little less granular and the carapace and terga a little more so than in the typical female of *Gervaisii*, Poc. Again, the vesicle is very much narrower than the fifth caudal segment, whereas in *Gervaisii* it is nearly as wide. These are characters, however, which appear to be subject to variation with age, for small examples of *Herbstii* taken in Demerara by Mr. W. L. Sclater are far more granular than adults captured by the same collector in the same locality, and they have the vesicle noticeably narrower. Consequently the distinctive features of this Gurupa specimen may be provisionally attributed to immaturity. The discovery of the specimen is, however, of great interest, inasmuch as no locality was previously known for the species.

In connexion with Prof. Kraepelin's latest utterances upon the subject of the genus *Brotheas*, the following observations may be made (see JB. Hamburg. Anst. xi. no. 1, p. 173, 1894) :—

In the first place, this author reserves the name *maurus*, Herbst, for the type of the genus, on the grounds that the species identified as *Scorpio maurus* by Herbst is generically distinct from the *Scorpio maurus* of Linné. He therefore admits in his system both *Heterometrus maurus* (Linn.) (=the true *Scorpio maurus*, Linn.) and *Broteas maurus* (Herbst) (=*Scorpio maurus*, Linn., Herbst). This, however, is not the practice that is usually followed in such matters. Nor has Kraepelin himself applied this principle of nomenclature in analogous cases : if he had done so, consistency would have compelled him to adopt such names as *Parabuthus australis* (Herbst), *Androctonus australis* (Linn.), *Centrurus australis* (De Geer) ; or, again, *Tarantula reniformis* (Linn.), *Neophrynus reniformis* (Fabr.), and *Heterophrynus reniformis* (Pallas).

In the second place, if *maurus* be retained as the specific name of the type species of *Brotheas*, De Geer, and not Herbst, should be cited as its author, the former in 1778 being the first to start the error, which was subsequently handed on by Herbst and C. Koch. This, however, is a matter of but little importance, seeing that the name *maurus* cannot be retained for the species. For this I adopt the name *Herbstii*, proposed by Thorell (Ann. & Mag. Nat. Hist. (6) xvii. p. 14, 1876). It is to be observed, however, that Thorell primarily gave the name *Herbstii* to the species wrongly identified as *maurus* by De Geer and later writers, without regard to the possibility of more than one species being involved. But the type of *Brotheas*, C. Koch, must presumably be the species upon which C. Koch establishes the genus. Therefore it seems that it is to this species that the name *Herbstii* must be affixed. The fact that the species came from Cayenne renders it probable that my identification of certain specimens from Demerara in the British Museum as *Herbstii* is correct, and at the same time throws doubt upon the identity of Simon's *Herbstii* from La Plata (see Ann. Soc. Ent. Fr. 1877, p. 241). Finally, it may be added that the description of Simon's species *paraensis* (Ann. Soc. Ent. Fr. 1880, p. 381) does not apply to the females of the Demerara specimens mentioned above, so that if the latter are correctly named, as I venture to think probable, it is impossible to follow Kraepelin in regarding *paraensis* as a synonym of *Herbstii*.

The females of the two species known to me in nature may be recognized as follows:—

a. Lower surface of first caudal segment coarsely granular, its median keels granular ..... *Herbstii*, Thor. (Guiana.)

b. Lower surface of first caudal segment smooth, punctured, without granules, its keels obsolete..... *Gervaisii*, Poc. (Amazons.)

B. paraensis, Sim., from Pará, based probably upon a female, differs from the above in having the carapace entirely devoid of granules; while *B. granulatus*, on the contrary, from Cayenne, the type of which is doubtless a male, is not from the description distinguishable from the males identified as *Herbstii* in the Museum collection.

XXXIV.—*New Species of Hymenoptera from Central America.* By P. Cameron, F.E.S.

[Concluded from p. 276.]

Fam. Sphegidæ.

Podium.

Podium crassipes, sp. n.

Nigrum: alis fuliginosis. ♂.
Long. 40 millim.

Hab. Mexico, Omealca, near Orizaba (*M. Trujillo*).

Antennæ reaching to the scutellum, bare, pruinose. Head below the ocelli with widely separated punctures; the front thickly covered with long black hair; the vertex glabrous; a narrow thin furrow leading to the ocelli, uniting to a short, shallow, narrow transverse one behind them; there is a narrow longitudinal keel above the ocelli. The antennæ are inserted immediately over the clypeus, which at the apex projects, is roundly concave, and is roundly and rather deeply incised, and bears a few shallow punctures. The eyes reach to the base of the mandibles and converge slightly above. The prothorax is elongate, being nearly as long as the mesonotum; the anterior is separated from the longer posterior portion by a deep transverse furrow, its centre being raised behind; the anterior region is punctured and bears long black hairs, the punctureless part of the posterior portion